

REMARKS

Claims 1-11 are pending in this application. Claims 1-5 stand rejected under 35 U.S.C. §102(e) as being anticipated by Michels (U.S. Patent No. 6,161,144). These rejections are respectfully traversed in light of the following remarks.

The presently-claimed invention relates to obtaining efficiency of storage space in a network switch which employs look-up tables and is intended to cope with circumstances where packets having different destination network addresses, which are intended for different networks, may have the same media access control destination address because they are required to pass through the same gateway before they are ultimately forwarded on to their respective networks.

In the Michels patent, and as also acknowledged by Figure 3 of the present application, it is known to employ the network address data to obtain the forwarding data from a packet. Thus, for example, Michels in Figure 4 shows a series of entries which each have a memory address (134) and a data entry consisting of the network address and the port number.

Figure 9 of Michels shows an alternative way of organizing the memory. The address data is hashed to provide the pointers 202 which point to the actual entries in the data table, these entries being identified by the actual memory address and the network address.

The presently-claimed invention is an improvement over such network switches and is advantageous when the network addresses are employed to determine a route to the distant station (such as station A in Figure 1) between the switch via a gateway which has

a single link to switch 10 but then has a multiplicity of links to the various remote stations. In a complex network, this type of configuration may be repeated many times. Moreover, a switch such as switch 10 may have a multiplicity of gateways each serving to convey packets to a multiplicity of different network addresses.

Figure 3 of the present application essentially describes the Michels device, whether Michels' data table is organized according to Figure 4 or Figure 9. In these devices, the search engine obtains, either directly or by means of pointers, either by hashing or some other search process, a memory address which contains data corresponding to the key (so that it can be determined whether the entry is correct) and other data particularly the forwarding data (usually a port number).

As is explained in the current application, such an arrangement is an inefficient use of storage space if, as in the configuration shown in Figure 1, packets having different network addresses will nevertheless have the same media access control ("MAC") destination address. Thus packets coming from the source in Figure 1 and destined for any of the networks A, B and C will have the same MAC address because the packets will each pass through the same gateway.

In the presently-claimed invention, instead of employing a single data table containing the network address data and the forwarding data, two tables are used. The first table (referred to as the "pointer table" in claims 1-5) contains entries including "a network address" and an "associated pointer" (or an "address pointer" in claims 4 and 5). The second table (referred to as the "data table" in claims 1-5) contains entries including a "media access control address" (claims 1-5), and also, in the case of claims 1-3, an

“identification of a port.” The pointers in the first table point to entries in the second table. Thus, the data is separated into two tables such that different entries in the first table may contain pointers to the same entry (*i.e.*, the same MAC destination) in the second table. This arrangement saves substantial storage space when a network employs gateways serving a multiplicity of different networks.

Michels' Figures 4 and/or 9 (and the corresponding description) do not teach or suggest the apparatus and method recited in the pending claims. Michels searches on (apparently) network addresses in a variety of means, but whether the search is direct or employs pointers according to Figure 4 or Figure 9, the table which is accessed by means of the search contains the network address and the forwarding data. Michels does not disclose a first table having pointers to a second table that contains MAC destination addresses, as recited in the pending claims.

For example, in Michels' Figure 9, the pointers (which are obtained from the search) point to entries (204) in a data table containing the network addresses. If Michels were in accordance with the presently-claimed invention, the entries 204 in Michels' Figure 9 would point to a further table containing the MAC address data. But Michels contains no such teaching or suggestion.


Like claims 1-5, new claims 6-11 recite a “first data table” having entries which include “a network address” and “a pointer,” and “a second data table” having entries which include “a destination media access control address,” where the “pointer” points to an entry in the “second data table.” Thus, Michels does not teach or suggest the subject matter of these claims.

Thus, Applicant respectfully submits that the pending claims are patentable over Michels and requests a notice to that effect.

Attached hereto is a marked-up version of the changes made to the claim by the current amendment. The attached page is captioned "**Version With Markings To Show Changes Made.**"

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
Donald L. Jackson
Reg. No. 41,090

DLJ:jl
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

5. (Amended) A method according to claim 4 [2] wherein the step (a) includes
hashing the network addresses to access the pointer table.